

SHIPPING CASE ALTERNATIVE

Background of the Invention

In the present business environment, there is unrelenting pressure to reduce costs and conserve resources in the manufacture of products. Not insubstantial is the amount of resource devoted to packaging and shipping of products such as detergent cartons. Often such products will be shipped in a shipping case made of corrugated fiberboard.

Brown et al., U.S. Patent No. 5,992,630 discloses a packaged product which includes a plurality of cartons, a corrugated board of paperboard carrier wall disposed along a portion of the periphery, and shrink wrapping. The shrink wrap film has vent holes that are specifically sized and spaced apart as needed to provide adequate venting of one or more of the volatiles from the shrink wrapped multipack. While the Brown et al. invention does not require a full shipping case, it still utilizes corrugated board or paperboard as the carrier wall for the multipack.

Oberle, U.S. Patent No. 5,002,782 discloses perforated heat shrinkable thermoplastic bags wherein slits cut by a knife blade reduce the splitting when a product such as a meat product is cooked within the bag. The perforations permit escape of moisture and prevent ballooning and collection of moisture which could leave to uneven cooking. The slitting is preferably done by a v-shaped knife blade. The bag is preferably formed from a seamless tube of thermoplastic material.

Limousin, U.S. Patent No. 4,586,312 discloses a heat shrinkable package with a frangible access panel defined by perforations. A perforation cylinder may be used.

Truchiya et al., U.S. Patent No. 5,067,612 discloses a shrink film package having a perforated folded strip. A perforation wheel may be used. A notch for tearing off may be provided.

Harris, U.S. Patent No. 4,815,603 is directed to a shrink wrap package having vent openings to permit free air flow through the package and allow the escape of gas. The shrink wrap plastic cover is shrink wrapped to a container by means of a heat gun.

Doyle, U.S. Patent No. 5,171,593 discloses a method of wrapping a tray of produce or other articles requiring ventilation. The method involves use of a sheet of flexible plastic film having a perforated portion. Micro perforations are arranged in rows and columns. The prior approach of randomly placing perforating needles around a cylinder press and applying the cylinder to the film is said to have resulted in generally ragged perforations which will cause the film to tear as it is stretched over the tray.

Britt et al., U.S. Defensive Publn. T900,020 discloses a shrink wrap package wherein portions of the seam adjacent the ends of the article form tear tabs.

Heider, U.S. Patent No. 4,333,570 discloses an opaque shrink wrapped packaging having finger slits terminating in semi-circular cuts.

Kirby, U.S. Patent No. 3,442,436 discloses an easy opening means for a package which comprises a pair of seams curved in a film like member wherein free ends of the tab means are pulled relative to the package, the tab means cause the film like member to tear along the paths.

Cuttrara, U.S. Patent No. 4,289,237 discloses a firewood package having a film of plastic material secured around a generally curved surface of a bundle wherein the plastic material is perforated to permit air to circulate into and through the bundle. The portions of the perforations illustrated in the figure are shown as being in two parallel arcs.

Becker, U.S. Patent No. 3,403,779 discloses an opening device for a package wherein the device is used to sever an elongated strip from the material.

Fales, U.S. Patent No. 4,306,653 discloses a packaging container for protection of fragile articles during shipping and storage which includes an outer carton and plurality of inner packing support panels attached to the contained article by a heat shrinkable film. The illustrated film appears to have perforations.

George, U.S. Patent No. 5,201,403 discloses a packaging system using a shrink wrapping material with weakenings.

Harris, U.S. Patent No. 4,941,572 discloses a package for shipping and storing articles, such as cut flower arrangements. A plastic film vented shell is disposed about the flowers and connected to a container in shrink wrap relation. The package includes a U-shaped insert. A plurality of openings 60 are present of a size and a number to permit air flow through the shell in a shrunk condition.

Anderson, U.S. Patent No. 3,804,235 discloses a package comprising an article having heat shrinkable material wrapped therearound. The sheet of heat shrinkable material has at least one opening. A thickening ridge defines a reinforcement which prevents tearing. A plurality of articles may be disposed in juxtaposed position within the package. The openings may be, e.g., for placement of a tax stamp on cigarettes or for carrying the package as in Fig. 10.

Ganz, U.S. Patent No. 3,756,397 discloses use a single wrap of a single sheet of continuous shrinkable and bondable plastic material to constitute virtually the entire package for a cluster of plural like containers such as beverage containers. Finger access openings such as 25-26 are provided in the plastic sheet in the upper side of the container.

Worley, U.S. Patent No. 4,971,197 discloses a shrink wrapped package with a tear strip.

Other patents involving shrink wrap packaging or other forms of packaging include Coons, U.S. Patent No. 3,416,288, Begnaud, U.S. Patent No. 3,589,510, Oglesbee, U.S. Patent No. 3,693,788, Becker et al, U.S. Patent No. 3,338,404, Whittington et al., U.S. Patent No. 3,764,351, Yamashita et al., U.S. Patent No. 5,240,111, Forman, U.S. Patent No. 3,456,780, Heier, U.S. Patent No. 4,254,869, Rumsey, U.S. Patent No. 3,026,656 and Brown, U.S. Patent No. RE 27212.

Roth, U.S. Patent No. 4,119,202 discloses a selectively rupturable shrink wrapped package.

Prior to the discovery of the present invention, of the inventors herein learned a shrink wrapped package of five cartons of detergent tablets was being sold in Europe wherein the shrink wrapped cartons were prepared by shrink wrapping a single clear film about the five cartons and heat sealing the film closed at the bottom of the cartons. Openings, which were a result of the process by which the shrink wrap was attained, were present at each end of the combined cartons/shrink wrap. The cartons were made of paperboard.

EDL, can pack brochure received by one of the applicants herein on November 27, 2000, discloses an "easy open perforated tear strip option." Film perforations for easy-open packs are mentioned as an option. Packs can be trayless and can be "bullseye".

Summary of the Invention

The invention is directed to the discovery of a new way of shipping cartons and other packages so as to minimize the cost and the resource used. In one embodiment, the invention comprises the use of two or more films shrink wrapped about the packages which are juxtaposed to form a unit. In this aspect of the invention at least one of the films is opaque and at least one of the films is clear. The opaque film is sufficiently resistant to the transmission of light such that UPC bar codes present on the individual packages cannot be read through the film by bar code reading machines. Since the unit which comprises the combined packages will typically have its own bar code, (eg., a separate, outer label), use of the opaque film prevents the bar code reading machine from inadvertently reading one of the bar codes for the individual packages and thereby falsely crediting the manufacturer with shipment only of an individual package rather than the multi-package unit. Typically, the two or more films will be heat sealed to each other.

In accordance with another aspect of the invention, the shrink wrap in place about the unit includes one or more gripping openings. These openings may be naturally formed during the shrinking of the films or they may be formed by cutting openings in the film. In accordance with a preferred embodiment of the invention, the gripping openings are formed on opposite ends of the unit, and the unit is shipped with the opaque film on top (eg., cartons inverted). Because the opaque film is likely to be the unperforated of the two films, this will minimize damage to the integrity of the film when the unit is lifted during shipping.

In accordance with another embodiment of the invention, the invention is directed to a combination of two or more packages juxtaposed to form a unit wherein the unit is shrink wrapped in two or more films on opposite sides of the unit and at least one of the films includes a single line of zipper perforations extending along one of the film sides and gripping apertures in at least one film side on opposite sides of the perforations. By "film side" is meant one of the sides of the unit from which a shrink wrap film is imposed and which unit side is completely covered by said one film, except for any perforations or other openings in that film. This arrangement permits the shrink wrap unit to be readily grasped and readily opened along the zipping perforations. By zipper perforations, it is meant that the perforations are arranged in sufficient proximity to one another linearly and spaced sufficiently from each other laterally to permit the shrink wrap film to open along the perforations by creating tears between the perforations upon application of reasonable manual force. The pattern of perforations is such that the perforations are opened like a zipper along the intended line of perforations.

In accordance with another embodiment of the invention, a unit comprising two or more juxtaposed packages is shrink wrapped in two or more films on opposite sides of the unit and at least one of the films includes zipper perforations in the film in a side intermediate the film sides and parallel to a longitudinal axis of the unit. Preferably, the single line of zipper perforations on each side of the unit extend from a gripping opening on one end of the unit perpendicularly to the plane of one of the film sides, across each heat seal side parallel to the longitudinal axis of the unit and then perpendicularly again to the plane of the film side until it reaches a second opening on the other end of the unit. By this arrangement, it is possible readily to tear open the shrink wrapped unit by application of reasonable manual force. The heat seal sides are the sides wherein the two films are heat sealed together.

In accordance with yet another embodiment of the invention, a unit comprising two or more juxtaposed packages is shrink wrapped in two or more films on opposite sides of the unit, preferably one opaque and one clear, and at least one of the films includes a tear strip defined by spaced zipper perforations in the film along two parallel lines in at least one of the film sides parallel to a longitudinal axis of the unit. Preferably, the tear strip extends from a gripper opening on one end of the unit perpendicularly to the plane of one of the film sides, across the film side parallel to the longitudinal axis of the unit and then perpendicularly again in the plane of the film side until it reaches a second opening on the other end of the unit. By this arrangement, it is possible readily to tear open the shrink wrapped unit by application of reasonable manual force.

For a more complete understanding of the above and other features and advantages of the invention, reference should be made to the following description of the preferred embodiments.

Brief Description of the Drawings

Fig. 1 is a perspective view of a unit of juxtaposed packages having a film positioned for shrink wrapping above one film side of the unit and a film positioned for shrink wrapping below another film side of the unit.

Fig. 2 is a perspective view of a unit of juxtaposed packages after shrink wrapping in accordance with an embodiment of the invention.

Fig. 3 is a perspective view of a unit of a juxtaposed package which has been shrink wrapped in accordance with a second embodiment of the invention.

Fig. 4 is a perspective view of a unit of juxtaposed cartons which has been shrink wrapped in accordance with a further aspect of the invention.

Detailed Description of the Invention

In Fig. 1, unit 10 wherein cartons 12 and 14 are juxtaposed side by side has positioned above it clear shrink wrap film 16 and positioned below it opaque shrink wrap film 18. Films 16 and 18 are made of a low density polyethylene or LDPE/HDPE blend and are heat shrinkable. The thickness of sheet 16 is preferably from 0.001" to 0.005", especially from 0.002" to 0.004". The thickness of sheet 18 is preferably from 0.001" to 0.005", especially from 0.002 to 0.003", most preferably 0.003" for each. Preferably film 18 is made opaque by adding (Ti O₂) titanium dioxide colorant to the resin.

Film 16 is shrink wrapped from one side of unit 10, the top side in Fig. 1. Unit 18 is shrink wrapped from an opposing side, from the bottom in Fig. 1. As seen in Fig. 2, shrink wrapping of the films results in a film side for the unit on each side on which the film fully covers the side of the unit. In the case of film 16, film side 30 is created, as seen in Fig. 2. In the case of film 18, film side 32 is created on the bottom of the unit, as also indicated in Fig. 2.

Heat sealing of the two films from opposite directions results in creation on each of the opposite ends of the unit of a "bullseye" which may be used as a gripping openings 34 and 36. Films 16 and 18 are heat sealed along a periphery of unit 10, excluding the bullseye, along perimeter heat seal 40. Extending from gripping opening 34 to gripping opening 36 first perpendicular to film 30 then parallel to a longitudinal axis of unit 10 and then again perpendicular to film side 30 to bullseye 36 are zipper perforations 44 (Fig. 2). Zipper perforations are designed such that

reasonable manual force applied to the shrink wrap will split open the shrink wrap along the perforations as a result of tears extending from one perforation to the next and so on. On either side of zipper perforations 44 are gripping openings 50, 52.

Typically, bottom film 18 will not be provided with perforations.

In operation, preferably, unit 10 is shipped with opaque film 18 (opaque film side 32) as the upper end. In this way when the unit is gripped at bullseye 34, 36 and force is inherently extended upwardly, there are no perforations to prematurely open the shrink wrap. Rather, in accordance with one aspect of the invention, the unit is shipped with opaque film side 32 as the upper end, which has no perforations, and the package is inverted when it is time to open the shrink wrap. The shrink wrap is then readily opened by applying manual force upwardly at the bullseye 34, 36 and/or at gripping apertures 50, 52.

In a second embodiment, illustrated in Fig. 3, zipper perforations 60, 62 extend on each side of the unit between bullseyes 34, 36. The zipper perforations preferably extend on the first bullseye end to and along each heat seal side and then to the second bullseye end. Again, it is advantageous for the unit 10 to be shipped with opaque heat seal side 32 as the top of the unit and to invert the package and apply reasonable manual force e.g., at the bullseye, to open the zipper perforations when it is time to display or use the cartons.

The embodiment of Fig. 4 is similar to the previous embodiments except that the perforations are present in the form of tear strip 70 defined by two parallel lines of perforations extending from gripping opening 34 across the clear heat seal side 30 to gripping opening 36. In this embodiment, as in the others, the unit 10 is preferably shipped with opaque film 18, opaque heat seal side 32 as the top of the unit to minimize the chances that when the unit is lifted during shipping the perforations will

prematurely tear open. When it is desired to open the unit, the unit is inverted and reasonable manual force is applied at the gripping openings 34, 36 to tear open package at the tear strip.

A particular advantage of one aspect of the present invention results from the use of the opaque film as the bottom half of the shrink wrap. The opaque film obscures to a bar code reader the bar codes which may well be present on the bottoms or bottom sides of the packages. It is desirable that the bar code readers read the bar codes for the whole unit e.g., on the outside of the shrink wrap rather than the individual packages. If a bar code reader picks up a bar code inadvertently for an individual package the manufacturer may not receive credit for having supplied the full multipack unit. Use of the opaque bottom film serves to minimize the possibility of an errant reading from the bar code readers.

Preferably the opaque side includes no perforations since it preferably serves as the top side of the unit. If perforations were present in the opaque side, then upward force experienced by the opaque side during shipping when the bullseye gripping openings are grasped could result in premature opening of the shrink wrap.

Preferably, the packages of the unit are cartons and more preferably, the cartons are corrugated as at 82 of carton 80 of Fig. 2. This enhances the shrink wrap unit compressive strength, notwithstanding the absence of a shipping case or a sleeve of paperboard or corrugated material within the shrink wrap.

There may be difficulties in applying more than one line of perforations by the manufacturer of the film. Where such is the case, a second line of perforations may be applied, for example at the facilities of the end product manufacturer, with a star wheel or the like. Where gripping openings are present in the clear heat seal side, on opposite sides of the perforations, it may be desirable to include J-shaped cuts to

ensure that in the event that a small tear occurs it does not spread to other parts of the shrink wrap.

Where cartons are used as a package, they may be made from paperboard or, more preferably as indicated above, corrugated fiberboard. The shrink wrapping films may be applied by conventional means such as heat sealing the leading edge (in the cross direction), pushing the cartons against the sealed edge with the films top and bottom, then sealing the trailing edge (CD), and then finally passing the bundle through heat tunnel equipment to form a tight heat-sealed bundle.

It should be understood of course that the specific forms of the invention herein illustrated and described are intended to be representative only, as certain changes may be made therein without departing from the clear teachings of the disclosure. Accordingly, reference should be made to the following appended claims in determining the full scope of the invention.